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Distinguishing Between Cost and Value of Psychological Interventions: The Case of Long- Versus Short-Term Therapy

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Abstract

Background: Psychotherapy has been proven in numerous clinical studies to be an evidence-based intervention for many mental disorders. However, the question of the necessary "dose," usually quantified as the number of therapy sessions, is a subject of ongoing debate. While proponents of long-term therapy emphasize significant but small additional effects, skeptics point to highly heterogeneous findings and escalating costs.

Method: Using realistic assumptions about costs, benefits, and resource constraints of psychotherapy, we calculated the long-run public health impact of longer versus shorter therapies. Specifically, we incorporated training costs, limited availability of trained therapists, and short- versus long-term recovery trajectories.

Results: Our simulation shows that, even under optimistic assumptions, short-term therapies achieve more remission-years per unit of cost than long-term therapies. A web application is provided to explore our calculations with customizable parameters and presets based on existing outcome studies.

Conclusion: The discussion of the potential benefits of longer therapies should be expanded to include not only clinical outcomes and therapy dose but also total treatment costs, including training requirements and therapist availability, in cost-effectiveness calculations.

Keywords

psychotherapy, simulation, cost-effectiveness, long-term therapy, short-term therapy

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Highlights

- In debates about the benefits of long-term therapy, resource constraints are rarely discussed.
- In a simulation study, we considered limited therapist availability and other factors.
- We show that, even under optimistic assumptions, short-term therapy is more cost-effective.

The growing need for mental health care is posing significant challenges to healthcare systems worldwide. Psychotherapy is considered an evidence-based treatment for many common mental disorders (Cuijpers et al., 2024), and training programs are designed to equip therapists with comprehensive theoretical and practical expertise. While psychotherapy is well established as an effective treatment, the question of whether its effects increase proportionally with treatment length remains unsettled.

In randomized controlled trials testing treatment manuals for specific disorders, interventions tend to be no longer than 25 sessions. In routine care, however, treatment length varies substantially between countries and funding systems, sometimes exceeding 100 sessions (Flückiger et al., 2020; Lutz et al., 2021). Research comparing shorter and longer treatments shows substantial variation in both treatment duration and outcomes. In some long-term treatment studies, therapies of approximately 50-70 sessions are compared to approaches using more than 200 sessions. For example, one large, pragmatic trial reported remission rates of 67% after 70 sessions of short-term psychodynamic therapy (STPP) and 81% after 240 sessions of psychoanalysis in a ten-year follow-up (Knekt et al., 2008). Table 1 compares the outcomes of long- versus short-term therapy, including a long-term follow-up assessment. These studies are a subset of those included in a meta-analysis by Woll and Schönbrodt (2020) that (a) compared two bona fide psychotherapies that (b) differed in the number of sessions, and (c) included a long-term follow-up.

The relationship between therapy duration and outcome remains a matter of ongoing debate. While existing research consistently demonstrates a non-linear relationship between therapy length and outcomes, showing diminishing returns for each additional session, session count also correlates with initial symptom severity (Lutz et al., 2021). This suggests that patients with more complex symptom presentations are more likely to receive longer therapies and that a mutual agreement between patients and therapists regarding a certain goal determines which dose is considered adequate. The number of sessions also differs between theoretical orientations (Juul et al., 2023). These differences mostly stem from differing theoretical assumptions about change in psychotherapy and are not necessarily based on empirical evidence.

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Table 1

Long-Term Follow-Up Data of Four Studies Comparing Bona Fide Therapies

Author	Long-term condition	Short-term condition	Sample sizes	Follow-up duration	Remission follow-up	Sessions	Therapists	ICER
Huber et al. (2012)	LTPP	CBT	43/41	3 years	83%/42%	234/44	7/7	463
Beutel et al. (2023)	LTPP	CBT	148/104	5 years	59.2%/61%	234/57	73/44	-9833
Lindfors et al. (2015)	LTPP	STPP	128/101	10 years	62%/45%	240/70 (253/93)[a]	41/12	1000
Henkel et al. (2025)	LTPP	STPP	301/127	6 years	90.9%/ 73.7%[b]	229/48	145/89[c] (192/42)	1052

Note. LTPP = long-term psychodynamic psychotherapy; CBT = cognitive-behavioral therapy; STPP = short-term psychodynamic psychotherapy; ICER = incremental cost-effectiveness ratio indicating the number of additional therapy sessions needed to obtain one additional remission.
[a]Session numbers in brackets include "auxiliary sessions". [b]Remission rates were estimated from the reported distributions as they were unavailable in the publication. [c]In this study, some therapists applied both treatment approaches. We decided to classify those as therapists for the STPP condition for the main analysis. The number in brackets indicates the therapist count if those therapists were classified as LTPP therapists.

Session Numbers and Cost-Effectiveness in Published Trials

When comparing treatments with different session numbers, these differences in session numbers may impact cost-effectiveness. To illustrate how the differences in the total session number might affect cost-effectiveness, we computed a rough cost-effectiveness ratio (ICER) by dividing the difference in therapy sessions (the "cost") by the difference in remission rates. The ICER (Incremental cost-effectiveness ratio), as recommended by the National Institute for Health and Care Excellence (2022), is computed as follows:

$$ICER = \frac{\Delta_S}{\Delta_R},$$

where Δ_S is the difference in session numbers, and Δ_R is the difference in remission rates in long-term follow-up. The higher this number, the lower is the additional benefit in terms of remissions.

In a study reporting a large difference in remission rates (Huber et al., 2012), we calculated that an unusually high treatment dose increase of about 463 additional delivered therapy sessions was required to achieve one additional long-term remission:

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$$ICER = \frac{234 - 44}{0.83 - 0.42} = 463.41$$

Assuming average costs between €100 and €200 per session, this translates to €46,300 to €92,600 per additional remission. These estimates are necessarily rough and depend on national health system costs, but they illustrate the magnitude of the investment required. It is important to note that these remission rates refer to a long-term follow-up, meaning that some patients may remain well for a long period after treatment. This raises the question of how to appropriately value such outcomes.

An Illustrative Cost Model

Longer therapies are sometimes assumed to be more efficient because they may yield better long-term outcomes. However, this considers only clinical outcomes and session numbers, while other potentially relevant factors that negatively impact cost-effectiveness, such as training requirements, treatment duration, and therapist capacity, are usually not discussed. To explore these issues, we present two scenarios based on outcome rates observed in previous trials.

Treatment Scenarios and Training Costs

The first scenario is a shorter method that is relatively easy to learn and cost-efficient to deliver. On average, it involves 50 sessions and leads to recovery in 55% of patients. Training for this method costs €35,000 and takes three years. The second method is more intensive and involves 200 sessions, but results in 75% of patients recovering. This difference in remission rates is roughly based on the empirical studies mentioned previously. Training costs €100,000 and takes five years. Each therapy session is assumed to cost €150, with an additional €400 in diagnostic and administrative costs per treatment. A short-term therapist can complete 20 treatments per year, whereas a long-term therapist can complete five. Recovery is defined here as remission sustained for at least five years. The incremental cost per additional recovery exceeded €100,000 even under such favorable assumptions.

We computed the Equivalent Annual Costs (EAC), assuming a 3% discount rate and 30 years worked after qualification (National Institute for Health and Care Excellence, 2022):

$$EAC = K \times \frac{r(1+r)^T}{(1+r)^T - 1},$$

where K is the training cost, r is the annual discount rate, and T is the years worked after qualification.

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Plugging in the assumed costs from the example, we obtain an EAC of €1,786 per year for the short-term therapy and €5,102 per year for the long-term therapy. Dividing these amounts by the number of patients treated per year, we get an EAC of €89.3 per patient for short-term and €1,020 per patient for long-term therapies. Factoring in training expenditures that we converted to an equivalent annual cost leads to a further increase of the ICER by about 4.1%, to €117,154.

Therapist Capacity

Another factor in evaluating cost-effectiveness is therapist capacity. In many health care systems, the availability of trained therapists is a major constraint. To illustrate the impact of treatment length on provider throughput, we assume that a therapist can deliver 10,000 sessions over ten years. Under the short-duration model, this translates to 200 completed treatments, with an expected 110 patients recovering. Given the assumed costs for sessions and training, this results in an expenditure of €7,989 per patient. In contrast, the longer treatment yields 50 completed cases in the same timeframe, with 38 recoveries, for €31,420 per patient.

Remission Years Over Time

Finally, long-term recovery rates reflect only one dimension of therapeutic effectiveness. Some patients may relapse after initially remitting after treatment, while others may continue to improve during follow-up. As such, remission rates at a fixed point in time provide only a limited view of the overall benefit that a therapy may confer across an extended time horizon. To account for changes in outcomes over time, we estimated the total number of remission years achieved by each treatment approach over ten years. We assumed a transition from post-treatment remission probability p_0 to a longer-term recovery level p_T, governed by a decay or growth function k that reflects cumulative improvement or relapse. We assumed that both therapies show 50% remission directly after treatment. We used the following expression:

$$p_T + (p_0 - p_T) \times k,$$

where k is a logarithmic function describing growth or decay over time:

$$k = 1 - \frac{(1+T)ln(1+T) - T}{Tln(1+T)},$$

Accounting for sustained benefits over ten years, short-term therapy produced more remission-years per cost unit than long-term therapy. Based on total costs and remission time, the incremental cost per additional remission year achieved by short-term therapy is modest (€36.79).

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Interactive Web Application

The example discussed above is just an exemplification using realistic, but fixed parameters. We developed a web application illustrating these calculations and allowing users to modify core assumptions such as costs, remission rates, and timeframes. It is available at: https://omegaeta.shinyapps.io/therapy_costs/.

Limitations

Our calculations relied on several assumptions, many of which are set rather conservatively in the sense that they do not disadvantage long-duration treatments. First, trials on long-term therapy are scarce, and their results are heterogeneous, ranging from no to large differences. Our illustration assumed a rather large difference in remission rates in favor of longer therapies, as well as a "sleeper effect" that leads to greater improvement over time. Second, our model does not account for the foregone income associated with the longer training period required for high-dose therapy methods. This omission may underestimate the true cost of delivering treatments with longer, more costly training. Third, the analyses presented do not model treatment effect heterogeneity, i.e., it is likely that some patients benefit substantially more from one approach than another. Instead, our estimates focus on average effects, which may obscure clinically meaningful individual differences in responsiveness. While empirically demonstrated for some disorders, the heterogeneity of treatment effects of psychotherapy is likely not large enough to invalidate our findings (Kaiser et al., 2022). Future, more extensive simulations should incorporate the degree of heterogeneity. Fourth, our model captures only direct treatment and training costs and omits indirect societal costs such as productivity losses from work absence during sessions. In some care systems like Germany's, where patients may take paid time off to attend, these costs scale directly with session number. A full societal-perspective analysis might therefore further disadvantage high-dose treatments, making this another conservative assumption of our model. Finally, the difference between intention-to-treat and completer samples needs to be considered. Willingness to enter and remain in very long treatments is itself selective: patients who cannot commit to 200-300 sessions are less likely to participate or to complete. Remission rates based on completers may therefore partly reflect favorable selection rather than dose alone, overstating the effectiveness of long treatments.

Conclusions and Implications

Valid comparisons between treatment approaches of varying doses require that cost-effectiveness models account for total treatment costs, additional investments due to prolonged training, therapist availability, and recovery trajectories. Even under favora-

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ble assumptions about the long-term efficacy of longer therapies, such approaches are inherently limited under resource constraints. The example presented may highlight the potential necessity of balancing broad availability with therapeutic ambitions. Although practitioners often point out that hardly any patients present with just one clearly definable problem, this would suggest short, focused sequential therapies (see, e.g., Gahnfelt et al., 2025; Voorendonk et al., 2020). However, this does not necessarily imply limiting the maximum dose of psychotherapy. Rather than committing to an a priori therapy dose, measurement-based care could let clinicians detect when a patient has reached a "good-enough" level and reallocate capacity. For training, an important implication would also not necessarily be that "shorter therapies are better", but that curricula should build competencies in brief, focused, and modular approaches that can be sequenced flexibly for comorbid presentations.

Ultimately, improving access to effective mental healthcare for more patients may depend less on maximizing individual treatment duration than optimizing the allocation of limited therapist capacities (Delgadillo et al., 2017, 2022). Although our data were based on studies involving adult patients, it is worth noting here that similar considerations are also necessary for children and adolescents. It is precisely in this area that broader availability is likely to have an even greater impact, because psychotherapy can be viewed as both a preventive measure and a treatment during critical developmental phases (Hudson et al., 2023).

To conclude, our calculations provide several arguments for psychotherapy training developers and policy makers to consider cost-effectiveness calculations at both the patient and therapist levels when further developing and formalizing psychotherapy training programs.

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Preregistration: This study was not preregistered.

Reporting Guidelines: This article reports an illustrative simulation-based cost model. It does not report a clinical trial, a systematic review, or newly collected empirical data, so no EQUATOR reporting guideline applies directly to this study type. Where applicable, the reporting of model structure, parameter sources, and assumptions follows the Consolidated Health Economic Evaluation Reporting Standards (CHEERS 2022; Husereau et al., 2022), and the presentation of quantitative results follows the APA Journal Article Reporting Standards for quantitative research (JARS–Quant).

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Data Availability: No new empirical data were generated for this study. All parameters entering the calculations are reported in the manuscript, and the calculations can be reproduced and varied using the web application at https://omegaeta.shinyapps.io/therapy_costs/.

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